Accton

Making Partnership Work

EtherHub-24s
Quick Installation Guide

EH2024
E1298-R02
150153-101

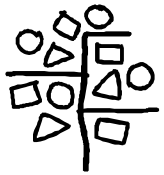
Accton

Making Partnership Work

Quick Installation Guide

EtherHub-24s

Smart Ethernet Hub with
24 10BASE-T (RJ-45) ports,
1 10BASE2 (BNC) port,
and 1 AUI port



Copyright © 1998 by Accton Technology Corporation. All rights reserved.

No part of this document may be copied or reproduced in any form or by any means without the prior written consent of Accton Technology Corporation.

Accton makes no warranties with respect to this documentation and disclaims any implied warranties of merchantability, quality, or fitness for any particular purpose. The information in this document is subject to change without notice. Accton reserves the right to make revisions to this publication without obligation to notify any person or entity of any such changes.

Accton

International Headquarters
No. 1 Creation Road III,
Science-based Industrial Park
Hsinchu 300, Taiwan, R.O.C.
Phone: 886-3-5770-270
FAX: 886-3-5770-267
Internet: support@accton.com.tw

USA Headquarters
P.O. Box 51420
Irvine, CA 92619-1420
Phone Numbers -
Sales: 888-398-2101 or 714-707-4800
Support: 888-398-4101 or 714-707-4847
RMA: 888-398-3101 or 714-707-4828
FAX: 714-707-2460

Accton is a trademark of Accton Technology Corporation. Other trademarks or brand names mentioned herein are trademarks or registered trademarks of their respective companies.

EH2024
E1298-R02
150153-101

Contents

Introduction 1

Package Contents 1

Description of Hardware 1

Mounting the Hub 1
- Stacking Hubs on a Flat Surface 2
- Mounting Hubs in a Rack 2

Connecting the Hub System 2
- Making a Connection via an MDI-X Station Port 2
- Making a Connection via the MDI Daisy-Chain Port 3
- Making a Connection to the BNC Port 3
- Making a Connection to the AUI Port 3

Powering on the Hub 3

Verifying Hub Status 4

Applications 4

Product Specifications 4
- Base Unit 4
- Network Criteria 5

Troubleshooting 5
- Diagnosing Hub Indicators 5
- Power and Cooling Problems 6
- Installation 6

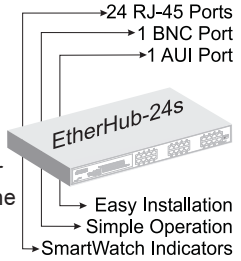
Port and Cable Assignments 6
- RJ-45 Port Description 6

EMI Certification 6
- FCC Class A (USA) 6
- Class A (Canada Department of Communications) 7
- Class A (Taiwan Bureau of Commodity Inspection) 7
- VCCI Class A Compliance (Japan) 7
- CE Mark Declaration of Conformance for EMI and Safety (EEC) 7

Safety Compliance 8
- Underwriters Laboratories Inc. (USA) 8
- Wichtige Sicherheitshinweise (Germany) 8

Warranty 9

Introduction



The EtherHub-24s includes 24 RJ-45 ports, 1 BNC port for connection to thin Ethernet (10BASE2), and 1 AUI port for connection to a variety of media types including 10BASE5 or fiber (using a suitable transceiver). With these options, you can easily link the hub to a thin or thick Ethernet backbone, or connect to a remote office. The hub also has an indicator panel that includes utilization and link/traffic LEDs, making it easy to monitor the hub. This guide contains all the information required to install and operate the hub.

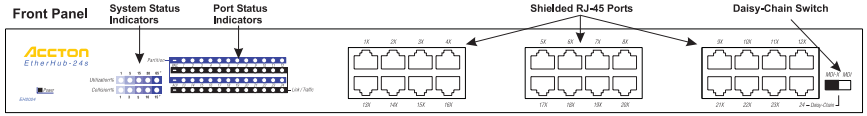
Package Contents

The package includes:

- EtherHub-24s (Model No. EH2024)
- Four rubber foot pads
- Rack mount bracket kit
- AC power cord
- BNC connector
- Quick Installation Guide
- Owner registration card

Description of Hardware

This hub consists of 24 RJ-45 10Mbps ports, 1 BNC port, and 1 AUI port. The following figure shows the front and back panel of the hub:



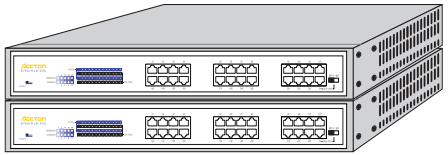
Mounting the Hub

This hub can be placed directly on your desktop, or mounted in a rack.

Before you start installing the hub, make sure you can provide the right operating environment, including power requirements, sufficient physical space, and proximity to other network devices that are to be connected. Verify the following installation requirements:

- Power requirements: 100 to 240 VAC (± 10%) at 50 to 60 Hz (± 3Hz). The hub's power supply automatically adjusts to the input voltage level.
- The hub should be located in a cool dry place, with at least 10 cm. (4 in.) of space at the front and back for ventilation.
- Place the hub out of direct sunlight, and away from heat sources or areas with a high amount of electromagnetic interference.
- If you intend to mount the hub in a rack, make sure you have all the necessary mounting screws, brackets, bolts and nuts, and the right tools.
- Check if network cables and connectors needed for installation are available.

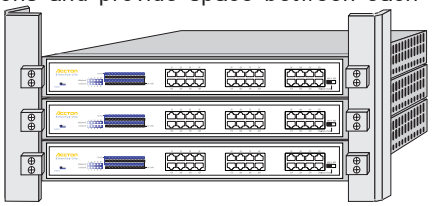
Stacking Hubs on a Flat Surface



This hub can be stacked anywhere there is a enough flat space, such as on a table or desktop.

1. Stick the self-adhesive rubber foot pads (that come with this package) on each of the 4 concave spaces located on the bottom of the first hub.
2. Place the first hub on a firm flat surface where you want to install the stack.
3. Repeat step 1 for each hub before stacking them. The rubber foot pads cushion the hub against shock/vibrations and provide space between each hub for ventilation.

Mounting Hubs in a Rack



Please comply with the following instructions to ensure that your hub is securely mounted in the rack.

1. Use a standard EIA 19-inch rack.
2. Use the brackets and screws supplied in the rack mounting kit.
3. Use a cross-head screwdriver to attach the brackets to the side of the hub.
4. Position the hub in the rack by lining up the holes in the brackets with the appropriate holes on the rack, and then use the supplied screws to mount the hub in the rack.

Connecting the Hub System

This hub has 24 RJ-45 ports, one of which also serves as an (MDI) daisy-chain port. It also has one BNC port on the rear panel for connection to thin Ethernet (10BASE2), and one AUI port for connection to thick Ethernet (10BASE5) or fiber (10BASE-F).

Making a Connection via an MDI-X Station Port

You can connect any RJ-45 (MDI-X) station port on the hub to any device that uses a standard network interface such as a PC or server, or to a network interconnection device such as a bridge or router (depending on the port type implemented).

1. Prepare the network devices you wish to network. Make sure you have installed 10BASE-T network interface cards for connecting to the hub's RJ-45 (MDI-X) station ports. You also need to prepare straight-through shielded or unshielded twisted-pair cables with RJ-45 plugs at both ends. Use 100Ω Category 3, 4 or 5 cable for all RJ-45 connections.
2. Connect one end of the cable to the RJ-45 port of the network interface card, and the other end to any available (MDI-X) station port on the hub. When inserting an RJ-45 plug, be sure the tab on the plug clicks into position to ensure that it is properly seated. Using the hub in a stand-alone configuration, you can network up to 24 end nodes.

Do not plug a phone jack connector into any RJ-45 port. This may damage the hub. Instead, use only twisted-pair cables with RJ-45 connectors that conform with FCC standards.

Notes: 1. Make sure each twisted-pair cable does not exceed 100 meters (328 feet).
2. When using Port 24 as an MDI-X port, set the port selection switch to 24MDI-X.

Making a Connection via the MDI Daisy-Chain Port

1. To make a direct connection to a compatible hub or switch, use the MDI daisy-chain port (Port 24). When connecting to this port, remember to set the port selection switch to MDI. You can also connect any RJ-45 (MDI-X) port on the hub to an MDI daisy-chain port on the other device.
2. Prepare straight-through shielded or unshielded twisted-pair cables with RJ-45 plugs at both ends. Use 100Ω Category 3, 4 or 5 cable for all RJ-45 connections. When inserting an RJ-45 plug, be sure the tab on the plug clicks into position to ensure that it is properly seated.

Notes: 1. To connect to another hub or switch, you may also attach to (MDI-X) station ports at both ends if you use crossover cabling (see page 6).
2. When using Port 24 as an MDI port, set the port selection switch to 24MDI.
3. When connecting to another 10Mbps hub, you can cascade up to 4 hubs, and use up to 100 meters (328 feet) for each inter-hub link.
4. To achieve a larger network diameter, you should use a switch to connect several hubs (or stacks) together. Because a switch breaks up the path for connected devices into separate collision domains, it has no restrictions on cascade length.

Making a Connection to the BNC Port

Plug the BNC T-type connector (provided with the hub) into a BNC port on the module. When connecting two devices via BNC ports, there should be at least 0.5 meters (1.64 feet) of coaxial cable between the two BNC ports. A thin Ethernet coaxial cable segment can be extended up to 185 meters (607 feet) and can link up to 30 nodes. If the unit is at the terminal end of a segment, connect a 50Ω terminator to the open end of the "T" connector.

Making a Connection to the AUI Port

Thick Ethernet - Attach an AUI to 10BASE5 transceiver to the thick Ethernet trunk, and then run an AUI drop cable (with 15-pin D-type connectors on both ends) between the AUI port on the hub and the transceiver. Note that the maximum length of an AUI drop cable is 50 meters (164 feet). A thick Ethernet segment can be extended up to 500 meters (1640 feet) and can link up to 100 nodes.

Fiber - Attach a 10BASE-F fiber optic transceiver to the AUI port. Use 50/125µm or 62.5/125µm multi-mode fiber cabling with SC or ST-type connectors (depending on the transceiver). Run cabling from the TX/RX ports on this hub to the RX/TX ports on the other device. When inserting the cable, be sure the tab on the plug clicks into position to ensure that it is properly seated. Note that 10Mbps fiber can be extended up to 2 kilometers (1.24 miles).

Powering on the Hub

1. Plug the power cord into the power socket at the rear of the hub, and the other end into a power outlet.
2. Turn on the power switch on the back of the hub.
3. Check the LED marked Power on the front panel to see if it is on. The unit will automatically select the setting that matches the connected input voltage. Therefore, no additional adjustments are necessary when connecting it to any input voltage within the range marked on the rear panel.

Note: The unit supports a "hot remove" feature which permits you to connect/disconnect RJ-45 or other media cables without powering off the hub and without disrupting the operation of the devices attached to the hub.

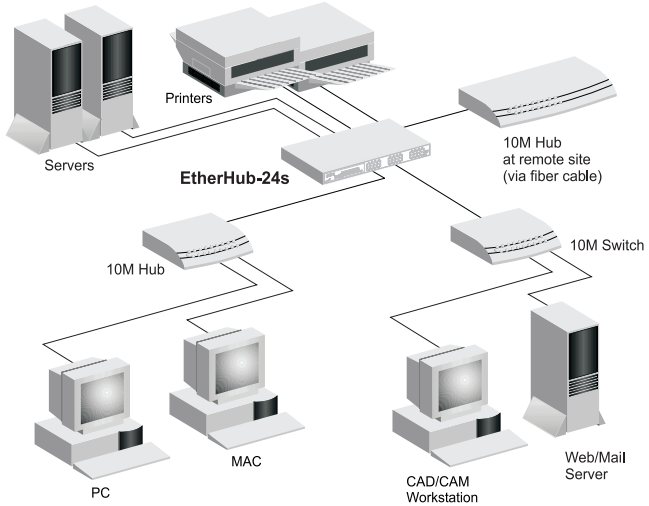
Verifying Hub Status

Check each connection by comparing the indicators with the following table.

LED	State	Indication
Power	On	Hub receiving power.
Collision%	On	Indicates percentage of collisions out of total packets.
Utilization%	On	Indicates percentage of LAN bandwidth utilized.
Partition	On	Port partitioned due to an abnormal network condition.
Link/Traffic	On	Port has established a valid network connection.
	Flashing	Port is receiving packets; blinking proportional totraffic.

Applications

Flexible Configuration - This hub is not only designed to provide network access for 10Mbps connections, but also to provide a wide range of options in setting up network connections. It can be used as a simple stand-alone hub, or can be cascaded to any compatible hub or switch. A sample configuration diagram is shown in the following figure.



Product Specifications

Base Unit

Access Method	CSMA/CD, 10 Mbps
Standards Conformance	IEEE 802.3 10BASE-T, 10BASE2, AUI
Communication Rate	10 Mbps
Media Supported	*10BASE-T* - 100Ω Category 3,4,5 UTP/STP, *10BASE2* - thin Ethernet coaxial cable, *10BASE5* - thick Ethernet coaxial cable[1], *10BASE-F* - ST-type multimode fiber[1] (1: via suitable AUI transceiver)
Number of Ports	24 RJ-45 ports, 1 BNC port, and 1 AUI port
Indicator Panel	Power, utilization, collisions, partition, link/traffic
Dimensions	440 x 172 x 43 mm (17.32 x 4.58 x 6.77 in)
Weight	4.42 kg (9.74 lb)

Input Power	100~240 VAC, 50/60 Hz (built-in full-range power module)
Power Consumption	15 Watts maximum
Maximum Current	$0.11A_{RMS}$ max. @ 110V, 0.05_{RMS} max. @ 240V
Heat Dissipation	51 BTU/hr
Temperature	0°C to 50°C (32 to 122°F) Standard Operating
Humidity	5% to 95% (Noncondensing)
Certification	CE Mark
Emissions	FCC Class A, VCCI Class A, CISPR 22 Class A
Immunity	IEC 801-2/3/4
Safety	UL, CSA, TÜV/GS

Network Criteria

Hub-to-Workstation Distance	100 meters maximum using twisted-pair cable
Inter-hub Distance (MDI Port)	100 meters using twisted-pair cable (4 hub cascade) (100 meters = 328 feet)

Troubleshooting

Diagnosing Hub Indicators

The hub can be easily monitored through panel indicators to assist the network manager in identifying problems. This section describes common problems you may encounter and possible solutions.

Symptom: Power indicator does not light up (green) after power on.
Cause: Defective power outlet, power cord, or internal power supply.
Solution: Check the power outlet by plugging in another device that is functioning properly. Check the power cord with another device. If these measures fail to resolve the problem, have the unit's power supply replaced by a qualified Accton distributor.

Symptom: Link indicator does not light up (green) after making a connection.
Cause: Network interface (e.g., a network adapter card on the attached device), network cable, or hub port is defective.
Solution: Verify that the hub and attached device are powered on. Be sure the cable is plugged into both the hub and attached device. Check the adapter on the attached device and cable connections for possible defects. See if your cable is functioning properly by using it for another port and attached device that displays valid indications when connected to the network. Replace the defective adapter or cable if necessary. Also verify that you have not exceeded specified limits for any attached media as summarized in the following table:

Media Type	Max Length	Max Nodes	Other
Twisted Pair	100 meters (328 feet)	1000	
Thin Ethernet	185 meters (607 feet)	30	0.5 meters[1]
Thick Ethernet	500 meters (0.3 miles)	500	50 meters[2]
Fiber Optic (10 Mbps)	2000 meters (1.24 miles)	link pair	

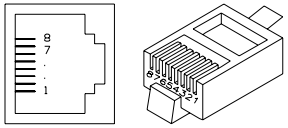
1 - Minimum distance between nodes.
2 - Maximum length of drop cable from AUI port to transceiver.
(0.5 meters = 1.64 feet; 50 meters = 164 feet)

Power and Cooling Problems

If the power indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply as explained in the previous section. However, if the unit powers off after running for a while, check for loose power connections, power losses or surges at the power outlet, and verify that the fan on back of the unit is unobstructed and running prior to shutdown. If you still cannot isolate the problem, then the internal power supply may be defective. In this case, contact your Accton distributor for assistance.

Installation

Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (e.g., the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.



Port and Cable Assignments

RJ-45 Port Description

RJ-45 station ports (MDI-X) can be attached to any devices which use a standard network interface (e.g., a workstation, server, bridge or router). Similar networking devices (e.g., another hub or switch) can be cascaded by connecting any of the RJ-45 station ports on the hub to a daisy-chain port (MDI) on the other device. Use 100Ω Category 3, 4 or 5 twisted-pair cable: unshielded or shielded (UTP/STP) cable for all RJ-45 connections on the front panel, and shielded (STP) cable for the stack ports on the rear panel. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

Pin	Assignment (Station Ports 1 - 24)	Assignment (Daisy-Chain Port, other device)
1	Input Receive Data +	Output Transmit Data +
2	Input Receive Data -	Output Transmit Data -
3	Output Transmit Data +	Input Receive Data +
6	Output Transmit Data -	Input Receive Data -
4,5,7,8	Not Used	Not Used

Schematics for both straight and crossover twisted-pair cable are shown below.

Straight-Through			Crossover		
(Hub)		(Adapter)	(Hub)		(Hub)
1 IRD+	———	1 OTD+	1 IRD+	———	1 IRD+
2 IRD-	———	2 OTD-	2 IRD-	———	2 IRD-
3 OTD+	———	3 IRD+	3 OTD+	———	3 OTD+
6 OTD-	———	6 IRD-	6 OTD-	———	6 OTD-

EMI Certification

FCC Class A (USA)

Warning: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures are required to correct the interference.

You may use unshielded twisted-pair (UTP) for RJ-45 connections - Cat. 3 or greater.

Class A (Canada Department of Communications)

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numérques", NMB-003 édictée par le ministère des Communications.

Class A (Taiwan Bureau of Commodity Inspection)

＜＜警告使用者＞＞

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

VCCI Class A Compliance (Japan)

この装置は、情報技術装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

CE Mark Declaration of Conformance for EMI and Safety (EEC)

This is to certify that this product complies with ISO/IEC Guide 22 and EN45014. It conforms to the following specifications:

EMC:	EN55022(1988)/CISPR-22(1985)	class A
	EN60555-2(1995)	class A
	EN60555-3	
	IEC1000-4-2(1995)	4kV CD, 8kV AD
	IEC1000-4-3(1995)	3V/m
	IEC1000-4-4(1995)	1kV - (power line), 0.5kV - (signal line)

This product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Warning! Do not plug a phone jack connector in the RJ-45 port. This may damage this device. Les raccordeurs ne sont pas utilisé pour le système téléphonique!

Safety Compliance

Underwriters Laboratories Inc. (USA)

Important! Before making connections, make sure you have the correct Cord Set. Check it (read the label on the cable) against the following specification list.

Voltage	Cord Set Specifications
120 Volts	UL Listed/CSA Certified Cord Set
	Minimum 18 AWG; type SVT or SJT three conductor cord
	Maximum length of 15 feet
	Parallel blade, grounding type attachment plug rated 15A, 125V
240 Volts (North America)	UL Listed/CSA Certified Cord Set
	Minimum 18 AWG; type SVT or SJT three conductor cord
	Maximum length of 15 feet
	Tandem blade, grounding type attachment plug rated 15A, 125V
240 Volts (Europe only)	Cord Set with H05VV-F cord having three conductors with minimum diameter of 0.75 mm²
	IEC-320 receptacle; male plug rated 10A, 250V

Wichtige Sicherheitshinweise (Germany)

1. Bitte lesen Sie diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssigoder Aerosolreiniger. Am besten eignet sich ein angefeuchtetes Tuch zur Reinigung.
4. Die Netzanschlu ßsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Beschädigungen hervorrufen.
7. Die Belüftungsöffnungen dienen der Luftzirkulation, die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen, die sich am Gerät befinden, sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
    a. Netzkabel oder Netzstecker sind beschädigt.
    b. Flüssigkeit ist in das Gerät eingedrungen.
    c. Das Gerät war Feuchtigkeit ausgesetzt.
    d. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
    e. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
    f. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
15. Zum Netzanschluß dieses Gerätes ist eine geprüfte Leitung zu verwenden. Für einen Nennstrom bis 6A und einem Gerätegewicht größer 3kg ist eine Leitung nicht leichter als H05VV-F, 3G, 0.75mm2 einzusetzen.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weniger.

Warranty

Accton warrants to the original owner that the product delivered in this package will be free from defects in material and workmanship for three years. For the warranty to apply, you must register your purchase by returning the registration card indicating the date of purchase and including proof of purchase. There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty does not cover the product if it is damaged in the process of being installed.

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY ARISING OUT OF ANY PROPOSAL, SPECIFICATION OR SAMPLE. ACCTON SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. ACCTON NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY OTHER LIABILITY.